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SOME BIRDS OF ROOSEVELT LAKE, ARIZONA

By HARTLEY H. T. JACKSON

WITH MAP AND ONE PHOTO

THE NOTES on the birds of Roosevelt Lake, Arizona, here presented are intended only as supplementary to the interesting account by Swarth¹, and include remarks only on those species found within the area actually covered by the lake proper and its immediate shore-line. The investigations were undertaken for the U. S. Biological Survey as a part of its general study of the land vertebrates of the state. Field work was conducted at the northern end of the lake May 19-24, 1916, although actual observations of the water birds were made mostly on May 20 and 22, and a trip was made by motor-launch to the bird colonies at the eastern end on May 26. Swarth visited the colonies of cormorants and herons on the lake early in June, 1917, a little more than a year after my observations were made; but the time he had available for study of the water birds was less than in my own case, and this in part probably accounts for the apparently greater number, both of individuals and species, indicated in my list. The counts of the breeding birds were made after I had become fairly well acquainted with the colonies, and I believe they are reasonably accurate. They are based on actual counts of adult birds, checked with counts of the nests.

Roosevelt Lake, which is formed by the damming of Salt River by Roosevelt Dam, is located near the geographical center of Arizona at an altitude of 2300 feet. It lies in a general southeasterly-northwesterly direction, is about thirty miles long and three miles wide in its widest part, and has a very irregular shoreline, particularly on the northern side. The lake is about 275 feet deep in the deepest parts, the supporting dam being 286 feet high. The water in this reservoir is supplied mainly by two streams, Salt River, which flows in from the east, and Tonto Creek, which flows in from the north, at opposite ends of the lake. The former banks of both Tonto Creek and Salt River were lined with cottonwoods (*Populus wizlizeni*), and in the shallow water near the ends of the lake many of these trees, killed by the high water, have their tops left protruding from the surface of the lake, offering nesting sites for cormorants and herons. Farther up these streams, particularly up the Tonto, are dead small trees and bushes, and large live trees, the trunks of which are but little submerged, where other herons nest. Both of these streams carry quantities of debris and silt, and already a mud and sand flat has begun to form at each end of the lake, especially noticeable at the Tonto end. Salt River seems to carry more debris, such as timber, but less silt. The flat at the mouth of the Tonto covers an area of approximately four square miles. At present there is no marsh or perceptible amount of aquatic vegetation growing on these flats, but it is possible, though hardly probable, that ultimately such a type of vegetation may develop, adding increased nesting places for species of birds now unknown to breed on the lake. The variation in the water level, however, tends to prevent the growth of such vegetation. Except at the ex-

¹Swarth, H. S., Birds of the Papago Saguaro National Monument and the neighboring region of Arizona, published by the National Park Service, Dept. of Interior, Washington, D. C., 1920.

treme ends of the lake and at two or three places along the northern side, the shores are steep and in many places almost precipitous.

The general topography in the vicinity of Roosevelt Lake is rough and broken. On the west side of the northern arm of the lake, where most of the field work was conducted, the soil covering is slight, the basal structure being largely a reddish limestone, inter-mixed with conglomerate and granite. Bumblebee Canyon drains the region of Mazatzal Range adjacent and just north of Four Peaks. This canyon is terraced much of its length through a gravel soil washed from the hills above. Underground water oozes to the surface in many places to form Bumblebee Creek, the actual stream being less than a mile long in dry weather. It was near the mouth of this creek that headquarters were made May 19 to 24.

The entire region adjacent to Roosevelt Lake lies in the Lower Sonoran Zone, which is here characterized by the growth of such plants as *Covillea glut-*

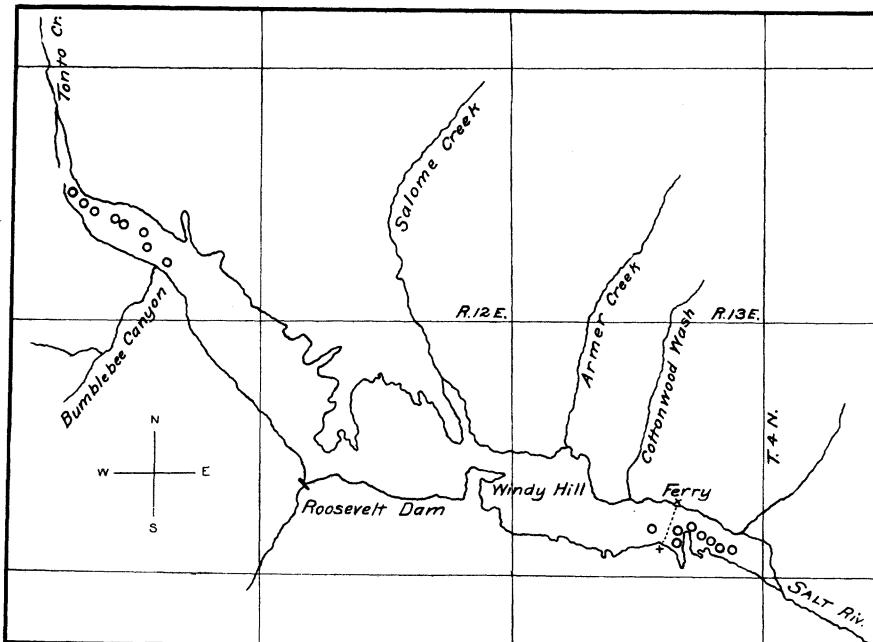


Fig. 12. MAP OF ROOSEVELT LAKE, ARIZONA. CIRCLES INDICATE APPROXIMATE LOCATIONS OF BREEDING COLONIES OF CORMORANTS AND HERONS.

inosa, *Prosopis glandulosa*, *Acacia greggi*, *Fouquieria splendens*, *Hymenoclea monogyna*, *Gutierrezia* sp., *Carnegia giganteum*, *Dasyliuron wheeleri*, *Yucca radiosa*, and *Chilopsis linearis*. The aspect is distinctly that of desert mountains.

Phalacrocorax auritus albociliatus Ridgway. Farallon Cormorant. This species was found breeding in dead cottonwoods, the tops of which protruded above water fifteen to forty feet deep. The nests were usually about fifteen to twenty feet above the water, never under twelve feet above the surface. The water, however, had receded about six feet during the nesting season. All the nests examined contained young from a week or ten days old, to birds well feathered and nearly able to leave the nest (the greatest part of the young were this age), and to a few able to fly and swim. All told, there were about 130 pairs of cormorants breeding on the lake, about 90 pairs at the Salt River end, and about 40 pairs at the Tonto Creek end. Swarth (*loc. cit.*, p. 52) estimated the number at the mouth of the Tonto as 40 or 50 birds.

Economically these birds may have some detrimental habits in tending to destroy fish planted in the lake. But the majority of the fish captured by them are the slow-moving German carp (*Cyprinus carpio*) and a few blue-gills (*Eupomis pallidus*), the principal game and food fish of the lake, the large-mouth black bass (*Micropterus salmoides*), probably being disturbed but little. Of three fish seen dropped by cormorants at the nesting colonies two were carp and one was a blue-gill.

Chaulelasmus streperus (Linnaeus). Gadwall. About a dozen Gadwalls were found at the Tonto end of the lake, where they were most frequently seen among the partly submerged brush or on the mud banks. The two specimens collected showed no signs of breeding activity either in habits or anatomically.

Spatula clypeata (Linnaeus). Shoveller. There appeared to be about ten Shovellers inhabiting the mud flats and brush at the Tonto end of the lake. The female taken had small undeveloped ovaries.



Fig. 13. NEST AND YOUNG OF PALLID GREAT BLUE HERON. TONTO END OF ROOSEVELT LAKE, ARIZONA.

Erismatura jamaicensis (Gmelin). Ruddy Duck. Ruddy Ducks were found only at the Tonto end of the lake where there were probably about twenty individuals. Three females which were collected each had small, undeveloped ovaries.

Ardea herodias treganzai Court. Pallid Great Blue Heron. The colonies of Great Blue Herons were somewhat scattered, being mostly at the Tonto end of the lake where about eighty pairs were nesting. Practically every nest examined contained young, which in most cases were nearly ready to leave. About forty pairs were found nesting at the Salt River end of the lake, May 26, making a total of about 120 pairs on the lake.

Herodias egretta (Gmelin). Egret. Two birds of this species, apparently a pair, were seen on several occasions on the mud flats at the mouth of Tonto Creek. At one time, after crawling for many yards through spiny desert vegetation, I succeeded in

approaching to within sixty yards of one of them. This was within chance range of my 20-gauge shotgun and, in fact, my gun was at my shoulder. But I did not pull the trigger, for here was one of the only two egrets on this bird sanctuary, possibly one of the only two in the state of Arizona, and they were probably breeding birds. These egrets, however, were exceedingly wary and usually remained well out on the mud flats where they were fairly safe.

Nycticorax nycticorax naevius (Boddaert). Black-crowned Night Heron. Swarth (*loc. cit.*, p. 54) considered the Black-crowned Night Heron less abundant on the lake than the Great Blue Heron, and reports seeing "perhaps 20 birds, all told." My own observations, as recorded directly from my field reports, are: "The most abundant, though probably the least conspicuous, bird on the lake, usually nesting in living cottonwoods partly submerged in the water on the flats. About 120 pairs nested at the Tonto end of the lake (May 20-24) and about 80 pairs (May 26) at the Salt River end. Young in most cases were able to leave the nests and perch on branches, or fly. Some ten nests were seen in dead trees, all others being in trees bearing green leaves."

Fulica americana Gmelin. Coot. There were between ninety and one hundred Mud-hens on the Tonto end of the lake, but not one was noted at the Salt River end. A male, collected May 20, had very small testes and apparently was not breeding.

Actitis macularia (Linnaeus). Spotted Sandpiper. A single individual of this species was seen on two occasions (May 20 and 22) on the shore near the mud flats at the Tonto end of the lake.

Oxyechus vociferus (Linnaeus). Killdeer. Some six or eight Killdeer were observed on the mud flats at the mouth of Tonto Creek, May 22.

Pandion haliaetus carolinensis (Gmelin). Osprey. Ospreys were seen daily (May 19-29) near Roosevelt Lake, where a dozen or more birds obtained food.

Aluco pratincola (Bonaparte). Barn Owl. A Barn Owl was seen, May 20, perched peacefully among a colony of twenty-seven cormorant and eight great blue heron nests containing young, in the top of a dead cottonwood over thirty feet of water and 300 yards from the nearest shore. So far as I could observe, it had not disturbed the rookery in the least.

Bubo virginianus pallescens Stone. Western Horned Owl. A nest, containing two young fully one-third grown and able to perch on limbs of the tree near the nest, was located in the top of a partly dead cottonwood well out in the water at the Tonto end of the lake (May 20).

U. S. Biological Survey, Washington, D. C., September 29, 1921.

FROM FIELD AND STUDY

On the Occurrence of the Buffle-head at Eagle Lake.—The notes under the above caption by Milton S. Ray in the November *Condor* require some comment. The bird in the first photograph is undoubtedly a female Buffle-head (*Charitonetta albeola*), the young ones following her are indefinite. The two downy young "Buffle-heads" in the other photograph (fig. 33) are obviously and emphatically American Mergansers (*Mergus americanus*), newly hatched. The markings on their heads together with the shape of their bills are both unmistakable, and quite unlike a downy Buffle-head.

Young ducks frequently follow an adult of another species. I have seen a female Buffle-head and a female Barrow Golden-eye both guarding a single duckling of the former species and both equally solicitous. At another time I watched a newly hatched Spotted Sandpiper trotting after a Least Sandpiper while its own parent was a considerable distance away.

Of course it is more than possible that the Buffle-head breeds in northeastern California, but unfortunately Mr. Ray's record fails to prove this, nor does he seem to realize what an extraordinary phenomenon was before him when he saw *both* parents attending the young. In the case of very aberrant ducks like *Erisomatura* and *Dendrocygna* the male parent may assist as in all the geese and swans; also I believe there have been instances of some southern ducks, the Cinnamon Teal for one, that have been